

CONFIDENTIAL

~~SECRET~~

SECURITY INFORMATION

PROVISIONAL INTELLIGENCE REPORT

PETROLEUM IN THE SOVIET BLOC

REFINING PRODUCTION OF PETROLEUM IN THE EUROPEAN SATELLITE S

CIA/RR PR-17 (IL-D)

25 June 1952

DOCUMENT NO. 7
NO CHANGE IN CLASS. ☐
☐ DECLASSIFIED
CLASS. CHANGED TO: TS S 8989
NEXT REVIEW DATE:
AUTH. HR 792
DATE 2-10-79 REVIEWER: 25X1

Note

The data and conclusions in this report do not necessarily represent the final position of ORR and should be regarded as provisional only and subject to revision. Additional data or comments which may be available to the user are solicited.

WARNING

This material contains information affecting the national defense of the United States within the meaning of the espionage law, Title 18, USC, Secs. 793 and 794, the transmission or revelation of which in any manner to an unauthorized person is prohibited by law.

CENTRAL INTELLIGENCE AGENCY

Office of Research and Reports

CONFIDENTIAL

~~SECRET~~

~~SECRET~~
SECURITY INFORMATION **CONFIDENTIAL**

FOREWORD

This report is one of a series of provisional reports pertaining to petroleum in the Soviet Bloc. The entire series is intended to cover all phases of petroleum, natural gas, and synthetic liquid fuels in the Soviet Bloc. These reports are presented as an intermediate step in consolidating pertinent intelligence on the subject and not as a finished study. In the consolidation of the available information, various reports and documents representing research by other intelligence agencies were utilized along with the results of research and analysis by members of the staff of CIA.

It is intended that this series of reports will serve the following purposes:

- a. Represent a base for contributions and additions by CIA and other agencies actively interested in petroleum intelligence.
- b. Facilitate the selection of the specific and detailed gaps in intelligence warranting priority attention.
- c. Provide the basis for a broad study on petroleum in the Soviet Bloc and various studies directed toward specific critical problems.

~~SECRET~~
CONFIDENTIAL

S-E-C-R-E-T

CONTENTS

	<u>Page</u>
Summary	1
1. Rumania	2
2. Austria	4
3. Hungary	5
4. Czechoslovakia	5
5. Poland	6
6. Albania	7
7. Bulgaria	7
8. Soviet Zone of Germany	8
Appendix A. Potential Aviation Gasoline Base Stock	9
Appendix B. Principal Operating Refineries and Capacities	11

S-E-C-R-E-T

~~SECRET~~

SECURITY INFORMATION

II-D

REFINERY PRODUCTION OF PETROLEUM IN THE EUROPEAN SATELLITESSummary

There is around 10 million tons of refinery capacity available in the European Satellites, more than enough to process the crude oil produced. Most of it is old and badly in need of repair, and only 1.5 million tons is thermal cracking. There are no facilities for the production of such specialized products as high octane aviation gasoline and aviation lubricants from crude oil. However, Rumania, Austria and Hungary produce from 150,000 to 210,000 tons of straight run aviation gasoline annually. The potential output of this gasoline from the crude oil of these countries is considerably larger - 310,000 to 450,000 tons a year. Appendix A describes the method for arriving at this potential.

There are numerous reports of expansion and modernization in all of the Satellites but there is no detailed information on the extent and type. Some of the construction is actually a relocation of refineries closer to the crude oil sources to relieve transportation. Also, some is the removal of facilities from one existing plant to another to increase the efficiency of operation. There is considerable evidence that the new equipment being installed does not include catalytic cracking or high grade lubricants facilities.

For the purpose of this report in the projection of production into the future the Satellite area is treated as a unit. As the refinery capacity appreciably exceeds crude production the total products produced by individual countries may fluctuate according to choice of refining location. However, the output of total products for the Satellites, as a unit, will be subject only to gradual change. With the exception of high octane aviation gasoline (which is not produced from crude in the Satellites) the general refining facilities are sufficiently flexible to produce the balance of individual products desired. Therefore in forecasting future production it is preferable to estimate total products rather than to present a breakdown of individual products. In estimates of former production it is practical to present the output of the individual products.

From the nearly 6.6 million tons of crude oil produced in the European Satellites in 1949, an estimated 5.7 million tons of products were obtained. It is expected that as the result of increased crude output production of

~~SECRET~~

~~SECRET~~

petroleum will rise and, during 1953, nearly 9.7 million tons will be produced. The following table shows the estimated quantities of products that can be obtained from the crude oil produced in the area.

Product Potential from Indigenous Crude	
	Thousand Metric Tons
1949	5,726
1950	6,273
1951	8,165
1952	8,965
1st Half 1953	4,828

The total potential product availability from indigenous crude in the European Satellite area is larger than the sum of the refinery outputs in the individual countries. All of the crude oil produced is not refined in the area. There are small quantities of Austrian and Albania petroleum exported to the USSR for processing, and about 100,000 metric tons were sent during the last four months of 1951 to the Soviet Zone of Germany to be utilized by the synthetic liquid fuel plants. The petroleum product production from this 100,000 tons is included in the synthetic output reported in Section II-E. The quantity of crude oil refined in each of the countries does not necessarily equal that produced, since consideration has been given to the movement of crude oil within the European Satellite area.

Estimates of product potential and refinery output are based on an availability factor of about 87 percent from the well-head to the consumer. This assumes approximately 1 percent consumption at the field, 2 percent physical loss and waste between the field and the refinery, 8 percent weight loss in refining, 1 percent waste in refining, and 2 percent distribution loss from the refinery to the consumer.

1. Rumania.

Rumanian refining capacity, concentrated around Ploesti, has always been larger than the amount of crude oil available. Processing facilities were estimated to have an original capacity in excess of 10 million tons annually. Present capacity, reduced by bomb damage, dismantling, cannibalization, and deterioration of equipment, probably does not exceed 7 to 8 million tons, a total still in excess of crude production. (Appendix B)

Since the end of World War II at least seven of the sixteen most important refineries have been closed, 1/ * reportedly because of

25X1

~~SECRET~~

~~S-E-C-R-E-T~~

insufficient supplies of crude oil and the poor condition of the equipment. Only five of the operating refineries have thermal cracking facilities, and these facilities were reported to have been shut down in June 1950.^{2/} Estimated output of the present refineries for 1950 and 1951 is shown below:^{3/}

Rumania		
Estimated Production of Petroleum Products		
Thousand Metric Tons		
Product	1950	1951
Aviation Gasoline *	110	145
Motor Gasoline	876	1,145
Kerosene	508	660
Diesel oil	628	820
Mazut	1,108	1,440
Fuel oil and distillates	436	570
Lubricants	12	20
Residuals	92	120
Others	230	300
TOTAL	4,000	5,220

Despite recent efforts to obtain replacement and repair equipment and reported construction of new refineries, it is doubtful that there has been an appreciable increase in refinery capacity. Specifically two refineries were reported under construction in Moldavia, one in Damnesti with equipment dismantled from the Tcheront Petrolblock refinery (throughput - 3,000 bbls/day), the other a cracking plant.^{4/} Also Astra Romana reportedly had a large installation for the production of high octane aviation gasoline under construction at Ploesti.^{5/}

* Straight run aviation gasoline with an octane number of 72.

~~S-E-C-R-E-T~~

~~SECRET~~2. Austria

As in the case of Rumania, the Austrian refineries are badly in need of repair and modernization. All of them are in the vicinity of Vienna and under the control of the Soviets. Officially the Floridsdorf and Kagran refineries are operated by the Austrian government, but, since they are dependent on Soviet allocation of crude oil, their operation is indirectly controlled by the Soviet occupation authorities. The distribution of the output of all of the refineries is made by the SMV.

Austria has a large refining capacity (Appendix B, and efforts are being made to increase it to handle more of the excess crude production. The Moosbierbaum, Lobau and Nova Schwochat are reportedly being expanded and being prepared for the production of high octane aviation gasoline. However, it is assumed that so far only straight run aviation gasoline has been produced since there is only thermal cracking equipment at these refineries now.

All of the crude produced in Austria is not refined locally. In 1950 and 1951 considerable quantities of crude oil were sent to the Soviet Zone of Germany, Hungary, Poland and Czechoslovakia, with small amounts to the USSR. The estimated output of all of the refineries in 1950 and 1951 is as follows:

Austria		
Estimated Refinery Production		
Product	1950	1951
Aviation Gasoline	24	26
Motor Gasoline	104	110
Kerosene	153	164
Diesel Oil	344	370
Fuel Oil	535	575
Lubricants	102	110
Others	13	15
TOTAL	1,275	1,370

~~SECRET~~3. Hungary.

The refineries in Hungary have an annual capacity of one million tons, sufficient to handle twice as much crude oil as is produced domestically. (Appendix B) All but the Koloj Refinery at Szony are pre-World War II plants that were expanded by the Germans. The refinery at Szony, the largest and most modern, was started by the Germans in 1944 and completed later by the Soviets. Although considerable war damage was sustained, the most important refineries either have been, or are being, reconstructed. Only one of the plants has cracking facilities and these are thermal.

Some crude oil was imported from Austria for refining in 1951 to enable Hungary to meet its export commitments. It is estimated that 500,000 metric tons crude oil were refined in 1950 and that 590,000 tons was processed in 1951 yielding the following:

Hungary

Estimated Production of Petroleum Products ^{3/}

	Thousand Metric Tons	
Product	1950	1951
Aviation Gasoline *	16	19
Motor Gasoline	124	146
Kerosene	90	106
Diesel Oil and Other Distillates	80	94
Fuel Oil	110	130
Lubricants	10	12
Other	5	6
TOTAL	435	513

4. Czechoslovakia.

In 1936 Czechoslovakia had 13 crude oil refineries with a maximum annual capacity of about 900,000 tons. In 1948 only five of these, with a total annual capacity of 440,000 tons, were in operation.

* Straight run aviation gasoline only is produced.

~~SECRET~~

~~S-E-C-R-E-T~~

(Appendix B) The refinery at Bratislava is being expanded to a capacity of 200,000 metric tons a year, and it has also been reported that the Pardubice refinery is in the process of expansion.

The insufficiency and poor quality of the domestic crude oil make it necessary for Czechoslovakia to import charge stock for its refineries. It has been estimated that in 1950 and 1951 imports of crude oil and mazut amounted to 200,000 and 360,000 tons. From this and local crude the estimated recovery is as follows:

Czechoslovakia		
Estimated Refinery Productions ^{B/}		
	Thousand Metric Tons	
<u>Product</u>	<u>1950</u>	<u>1951</u>
Motor Gasoline	7	10
Kerosene	9	15
Diesel and other Distillates	36	60
Fuel Oil	26	50
Lubricants	66	140
Others	49	80
TOTAL	213	355

8. Poland.

At the time of the boundary changes at the close of World War II, Poland lost its three largest and most modern refineries, which are located in Drohobycz. There remain in Poland five operating refineries with a total annual capacity in 1948 of less than 400,000 tons plus a number of small ones which are not in operation. The individual capacities of the producing plants are shown in Appendix B. Since the refinery at Trzebinia was reportedly being rebuilt to have a capacity of 200,000 metric tons, ^{9/} total current capacity is probably about 500,000 tons a year.

~~S-E-C-R-E-T~~

~~S-E-C-R-E-T~~

Approximately 200,000 metric tons of crude oil are imported annually for these refineries. The estimated output of refined products is given in the following table.

Poland

Estimated Production of Refined Products

Product	Thousand Metric Tons	
	1950	1951
Motor Gasoline	94	100
Kerosene	52	56
Gas and Light Oils	68	73
Lubricants	65	69
Others	35	37
TOTAL	314	335

6. Albania.

In addition to the refineries in the foregoing countries, Albania has two small plants in the vicinity of Kucove with a combined capacity of about 50,000 tons annually. Little is known of the actual output except that it is around 40,000 tons a year, of which 30 percent is 50-Octane gasoline, diesel oil, and naphtha, and the remainder heavy fuel oil and bitumen. A number of reports have been received on the construction of a modern refinery with a capacity of 150,000 tons a year. The equipment is to come from the USSR, and the completion of the refinery by 1952 is planned.

7. Bulgaria.

There are three small topping plants with a combined annual capacity of 60,000 tons in Bulgaria at Ruso on the Danube River. Before World War II, the output was approximately 25 percent gasoline, 12.5 percent each kerosene and gas oil, and 50 percent residue which was used as a low-grade fuel oil. The refineries have not operated since World War II.

- 7 -

~~S-E-C-R-E-T~~

S-E-C-R-E-T

8. Soviet Zone of Germany.

Approximately 120,000 tons of Austrian crude oil are shipped each year to three small crude oil refineries in the Soviet Zone of Germany where it is processed into lubricants, plus small quantities of gasoline, diesel oil, and fuel oil. The most important of these is the Luetzkendorf, near Merseburg, which has facilities for refining crude oil in addition to a Fischer-Tropsch plant. The other two are much smaller and are located at Klaffenbach and Herrenleite. Together, the three plants produced nearly 65,000 tons of lubricants in 1950. In addition, during the last four months of 1951, it was reported that Austrian crude oil was sent to the Leuna and Boehlen synthetic refineries for processing.

- 3 -

S-E-C-R-E-T

Is This an
analytical "methodology"
which would merit
retention?



~~SECRET~~

APPENDIX A

POTENTIAL AVIATION GASOLINE BASE STOCK

In order to estimate the maximum potential of straight run aviation gasoline base stock that could be obtained from the crude oil produced in Austria, Hungary and Rumania, a survey was made of the average analysis of the crudes in the countries. It was found that in the case of Austria, the average straight run gasoline yield was less than 5 percent, about one-fifth to one-sixth of the normal from a good paraffin base crude. It was, therefore, assumed that the yield of straight run aviation gasoline base stock was no more than 2 percent by volume, compared with a normal of 8 - 10 percent.

Hungarian and Rumanian crudes have a much higher yield of straight run gasoline ranging from 67 to 72 octane number. As a result, it was assumed that the potential yield of good quality aviation gasoline base stock would be closer to normal. However, because of the low efficiency of operation of some of the refineries in Hungary and Rumania, the yield was estimated to be 6 percent and 7 percent by volume respectively. 25X1

- 9 -

~~SECRET~~

~~SECRET~~

The potential straight run aviation gasoline base stock from crude oil produced in these three countries is about twice the actual production. The relationship of the estimated potential to production is shown below for the years 1950 through 1953. The projected production is estimated on the basis of past performance.

Austria, Hungary, Rumania

Straight Run Aviation Gasoline Base Stock

	Thousand Metric Tons	
	<u>Potential</u>	<u>Production</u>
1950	316	150
1951	409	190
1952	450	200
1953	452	210

~~SECRET~~

~~SECRET~~**CONFIDENTIAL**

APPENDIX B

PRINCIPAL OIL-REFINING REFINERIES AND CAPACITIES

Country	Name	Location	Metric Tons	
			Distillation	Cracking
Rumania <u>11/</u>	Concordia-Vega	Ploesti	1,000,000	195,000
	Romana-Americana	Teleajen	750,000	280,000
	Steaua-Romana	Campina	600,000	a/
	Creditul Minier	Brazi	275,000	110,000
	Astra Romana-Phoenix			
	Orion	Ploesti	2,000,000	500,000
	Colombia	Ploesti	500,000	215,000
	Petrol Block-Unirea	Ploesti	700,000	a/
	Moinesti	Moinesti	300,000	"
	Darnanesti	Darnanesti	300,000	"
Austria <u>12/</u>	Nova Schwochat	Nr. Vienna	390,000	144,000
	Moosbierbaum	" "	300,000	90,000
	Korneuberg	" "	300,000	"
	Lobau	" "	300,000	a/
	Floridsdorf	" "	180,000	"
	Vosendorf	" "	130,000	"
	Kagran	" "	150,000	"
Hungary <u>13/</u>	Molaj	Szony	300,000	"
	Vacuum	Almasfuzito	200,000	"
	Shell-Koolaj	Csepel Island	200,000	"
	Magyar-Hydro-Benzin Peti	Petfurdo	150,000	30,000
	Magyar	Budapest	60,000	"
	Fanto	Budapest	60,000	"
	Szoreg	Szoreg (Szeged)	20,000	"
	Nyirbogdany	Nyirbogdany	20,000	"
Czechoslovakia <u>14/</u>	Apollo	Bratislava	80,000	50,000
	Fanto	Pardubice	80,000	"
	State Refinery	Dubove	80,000	"
	Vacuum	Kolin	90,000	"
	Privoz	Moravska-Ostrava	60,000	"
Poland <u>15/</u>		Czechowici	80,000	13,500
		Jaslo	75,000	"
		Trzebinia	75,000	"
		Glinik-Mariampolski	75,000	"
		Jedlicze	60,000	"

a. Some of this capacity is probably thermal cracking.

- 11 -

~~SECRET~~**CONFIDENTIAL**